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**(54) PRODUCTION OF ACICULAR, FIBROUS OR
POROUS DIAMOND OR THEIR AGGREGATE**

(57) Abstract:

PURPOSE: To easily obtain an acicular, fibrous or porous diamond or its aggregate in high efficiency by treating a specific diamond with plasma in a specific gas stream or by oxidizing a diamond under heating.

CONSTITUTION: Diamond or diamond film synthesized by plasma chemical vapor deposition or chemical vapor deposition process is etched by plasma treatment in a gas stream containing oxygen, carbon

dioxide, steam, hydrogen, halogenated hydrocarbon or halogenated carbon or by thermal oxidation treatment in a gas stream containing oxygen, carbon dioxide or steam to obtain the objective acicular, fibrous or porous diamond or its aggregate. The acicular or fibrous diamond can be used as an aggregate for forming a composite material having excellent mechanical, thermal and chemical properties by combining with various other materials. The porous diamond is utilisable as a highly corrosion-resistant adsorbent taking advantage of high specific surface area.

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